UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

IO

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 09/358,103 | 07/21/99 | ROCA A | ROCA-01 |

HM22/1201

R PERRY MCCONNELL
9001 FOREST CROSSING
SUITE F
THE WOODLANDS TX 77381

| EXAMINER | |
|---|---|
| FRONDA, C | |
| **ART UNIT** | **PAPER NUMBER** |
| 1652 | 12 |

**DATE MAILED:** 12/01/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

| Office Action Summary | Application No. 09/358,103 | Applicant(s) Roca |
|---|---|---|
| | Examiner Christian L. Fronda | Group Art Unit 1652 |

☒ Responsive to communication(s) filed on *Sep 8, 2000* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) *1-27* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-27* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

*--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---*

## DETAILED ACTION

1. In the **RESPONSE TO THIRD OFFICE ACTION** dated September 8, 2000 (paper no. 11), Applicants have presented arguments to traverse the rejections of claims 1-27 stated in the previous Office Action.

2. Claims 1-27 are under consideration in this Office Action.

3. Applicant's arguments filed on September 8, 2000 (paper no. 11) have been fully considered and are deemed persuasive to overcome the rejection of claims 1-27 under 35 U.S.C. 101 and the rejection of claims 1-27 under 35 U.S.C. 103(a). Accordingly, these rejections have been withdrawn.

### *Claim Rejections - 35 U.S.C. § 112, 1st Paragraph*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Regarding claims 1-27, they are directed to all RecA homolog proteins from any biological source which has RecA activity and are mutated to have a replacement of an amino acid residue in their corresponding MAW motif with a volumetrically larger amino acid residue. The specification, however, only provides the following representative species of these proteins: a mutant *E. coli* RecA protein having an amino acid residue at position 47, 49, 53, or 56 in its MAW (Makes ATP Work) motiff as set forth in SEQ ID NO: 1 replaced with tryptophan or tyrosine . Moreover, the specification fails to describe additional representative species of these proteins by any identifying structural characteristics or properties other than having RecA activity, which fails to impart a high predictability of structure for any additional RecA homolog protein. Given this lack of additional representative species as encompassed by the claim, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

### *Claim Rejections - 35 U.S.C. § 112, 2nd Paragraph*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-27 are again rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As stated in the previous Office Action the amino acid residue positions recited in these claims do not correspond to SEQ ID NO:1. The claims recite positions such as residue 43, 52, and 53. However, SEQ ID NO:1 is a sequence consisting of only 26 amino acid residues.

If the claims were directed toward SEQ ID NO:3 which is the consensus MAW motif amino acid sequence and the claims recite the specific position of amino acid residues in SEQ ID NO:3 to replace, then this rejection would be withdrawn.

### *Claim Rejections - 35 U.S.C. § 102*

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 8, and 9 are again rejected under 35 U.S.C. 102(b) as being anticipated by Zarling *et al.* As stated in the previous Office Action, claims 1, 2, 8, and 9 are anticipated by Zarling *et al.* because Zarling *et al.* teach a RecA protein that has an arginine residue, which is volumetrically larger than glycine, at the position corresponding to position 43 of the *E. coli* MAW motif.

Applicants argue that Zarling *et al.* do not teach a RecA protein mutant having an amino acid residue in its corresponding MAW motif replaced with a volumetrically larger amino acid residue but rather teach a naturally-occurring sequence. Applicant's arguments have been fully considered but they are not persuasive. The claims encompass any mutant including naturally occurring RecA protein mutants. Hence, in absence to facts to the contrary the RecA protein

taught by Zarling *et al.* is a naturally occurring mutant having an amino acid residue in its corresponding MAW motif replaced by a volumetrically larger amino acid residue. Accordingly, claims 1, 2, 8, and 9 stand rejected.

10. Claims 4, 15, and 21 are again rejected under 35 U.S.C. 102(a) as being anticipated by Garcia. As stated in the previous Office Action, claims 4, 15, and 21 are anticipated Garcia since Garcia teach a RecA protein that has an isoleucine residue at the position corresponding to position 53 of the *E. coli* MAW motif and a phenylalanine residue at position 60 of the *E. coli* MAW motif.

Applicants argue that Garcia does not teach a RecA protein mutant having an amino acid residue in its corresponding MAW motif replaced with a volumetrically larger amino acid residue but rather teaches a naturally-occurring sequence. Applicant's arguments have been fully considered but they are not persuasive. The claims encompass any mutant including naturally occurring RecA protein mutants. Hence, in absence to facts to the contrary the RecA protein taught by Garcia is a naturally occurring mutant having an amino acid residue in its corresponding MAW motif replaced by a volumetrically larger amino acid residue Accordingly, claims 4, 15, and 21 stand rejected.

11. Claims 7 and 14 are again rejected under 35 U.S.C. 102(a) as being anticipated by McKean *et al.* As stated in the previous Office Action, claims 7 and 14 are anticipated by McKean *et al.* since McKean *et al.* teach a Dmc1 protein which is homologous to bacterial RecA protein and has an arginine residue at the position corresponding to position 59 of the *E. coli* MAW motif.

Applicants argue that McKean *et al.* does not teach a RecA homolog protein mutant having an amino acid residue in its corresponding MAW motif replaced with a volumetrically larger amino acid residue but rather teaches a naturally-occurring sequence. Applicant's arguments have been fully considered but they are not persuasive. The claims encompass any mutant including naturally occurring RecA homolog protein mutants. Hence, in absence to facts to the contrary the RecA homolog protein taught by McKeań *et al.* is a naturally occurring RecA homolog protein mutant having an amino acid residue in its corresponding MAW motif replaced by a volumetrically larger amino acid residue. Accordingly, claims 7 and 14 stand rejected.

12. Claims 16 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ramesar *et al.* As stated in the previous Office Action, claims 16 and 22 are anticipated by Ramesar *et al.* since Ramesar *et al.* teach a RecA protein that has a tryptophan residue at the position corresponding to position 40 of the *E. coli* MAW motif.

Applicants argue that Ramesar *et al.* do not teach a RecA protein mutant having an amino

acid residue in its corresponding MAW motif replaced with a volumetrically larger amino acid residue but rather teaches a naturally-occurring sequence. Applicant's arguments have been fully considered but they are not persuasive. The claims encompass any mutant including naturally occurring RecA protein mutants. Hence, in absence to facts to the contrary the RecA protein taught by Ramesar *et al.* is a naturally occurring mutant having an amino acid residue in its corresponding MAW motif replaced by a volumetrically larger amino acid residue. Accordingly, claims 16 and 22 stand rejected.

## *Conclusion*

13. No claim is allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian L. Fronda whose telephone number is (703)305-1252. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached at (703)308-3804. The fax phone number for this Group is (703)308-0294. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1600 receptionist whose telephone number is (703)308-0196.

CLF

NASHAAT T. NASHED PHD.
PRIMARY EXAMINER